

APSW VII

Session IV: Plenary

REPORT OF APSW VII PLENARY MEETING

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Results of the APSW VII Plenary meeting, held to discuss issues and action items related to the experiments conducted with the NASA ACTS Propagation Terminals (APTs), are summarized here. As operation of the APTs has become more routine, attention is increasingly focused on issues related to the processing, analysis and dissemination of data.

I. Issues Related to Contracts and Measurement Period

R. Bauer noted that the APT measurement contracts for the various sites expire during September-October 1995, which does not cover a full 2-year data-collection period through 30 November 1995. The ACTS budget is undetermined, and continuation of the propagation program beyond the previously-planned 2-year period is not assured. A delayed decision, even if positive, may pose difficulties for some experimenters. No-cost extensions can be arranged for completion of the contract reports, but this action will not relieve problems related to student salaries and costs associated with continued data collection.

A wide-ranging discussion ensued and several experimenters offered helpful suggestions. Based on these deliberations, the group reached a consensus on a preferred approach for current operations as follows.

ACTIONS

In the near term, each experimenter should:

- a) focus on analyzing the first year of collected data, which will be advantageous whether contracts are renewed or not;
- b) request via the Contract Officer a no-fee contract extension to 31 December 1995 (with copy to the Technical Monitor) to increase the available time to complete a final contract report should additional contract funds not be forthcoming; and
- c) if funding renewal is delayed beyond the contract expiration date, continue data collection if possible to avoid gaps in data collection.

Regarding contract administration, R. Bauer stated that about 6 weeks are required to process the no-cost contract extensions.

II. Data Preprocessing and Analysis

Experimenters reported on experience to date with the software that performs various data preprocessing tasks, plus beacon and radiometer calibrations, and which outputs files in the .PV1 format. Several noted that, due to editing constraints, the .PV1 files can contain data known to be flawed (e.g., due to maintenance), which is unsatisfactory from the standpoint of quality control of the ACTS data that are to be archived.

H. Helmken asked how to designate "bad" data and what action if any is appropriate for missing data blocks. W. Vogel remarked that archived data are to represent raw data that have been verified as valid, and should not contain derived data. J. Beaver observed that the experimenters require the capability to mark data that they know are invalid.

J. Feil and C. Mayer stated that some problems persist with data preprocessing. The process is slow, and the .PV0 and .PV1 files do not always agree. Comparison of beacon and radiometer distributions also has uncovered some discrepancies.

C. Mayer noted it would be beneficial for experimenters to be aware of the preprocessing constants (antenna efficiencies, etc.) derived by each site. X. Wang stated that he needs .RV0 data from two more sites in order to prepare the ranging-tone files.

D. Westenhaver indicated that he has a copy of software developed by R. Crane to process spectrum data. The software was requested by J. Feil and C. Mayer.

ACTIONS

D. Westenhaver will develop software to permit experimenters to designate start/stop times for bad or questionable data. The general procedure will be to generate and display .PV1 files so that experimenters may insert start and stop times for bad data segments in each channel. The resulting ".PV2" files will be the files archived by the Data Center. It is planned to complete this enhancement by 15 July 1995.

Each APT site is to FTP a table of preprocessing constants to D. Westenhaver, for access by experimenters as desired. Colorado, Maryland and New Mexico .RV0 data will be FTP'd to U. Oklahoma for use in developing the ranging-tone files.

III. Data Formats and Presentation

Presentation formats for the ACTS data were discussed, especially in light of the potential need to prepare final contract reports should the measurement program not be continued. It was noted that a format for plotting cumulative statistics had already been agreed. There was brief discussion of the most appropriate venues and methods to disseminate results of the ACTS measurements to the user community and propagation community at large, to demonstrate the progress that has been made and supply results to the user community.

W. Vogel proposed that a general-purpose template be prepared for use by all experimenters when preparing final contract reports so that this chore would need be done only once. J. Goldhirsh recommended that a standard set of data presentation results be established for use by each experiment site (in addition to any data analyses or results particular to that site). H. Helmken noted that standards should also be established for data processing (*e.g.*, time constant for running average used to separate rain attenuation from scintillation) so that results from the various sites could be directly compared in further analyses. It was noted that the NASA Handbooks, VPI&SU reports for Olympus measurements, and the OPEX reports provide useful reference material for such an endeavor.

ACTIONS

L. Ippolito, R. Crane and D. Rogers will draft a report template, and propose standards for a contractually-valid minimum set of data results and data-processing parameters for consideration by the experimenters. The template is to be considered only as a guide. It is planned to complete this draft material by 1 August 1995.

H. Helmken also volunteered to evaluate, using data from Florida and other sites, the provisional data-processing parameters proposed by the aforementioned group to establish optimum data-processing standards.

IV. Data Dissemination

R. Bauer reported that he had received several requests for specific segments of ACTS propagation data, and asked as to the proper disposition of such requests (*e.g.*, refer to the Data Center; forward to the relevant experiment site?) Several experimenters also asked how the individual sites should treat any such direct requests.

R. Henning stated that he was considering collaboration with NEXRAD radar experts to evaluate the weather profile in Florida, to assist other government and industrial organizations, and asked who owns the ACTS data and if their use in such joint activity is appropriate. F. Davarian stated that the ACTS data are in the public domain, and there is no restriction on their use; such applications, especially to assist users with implementation issues, are encouraged. However, it was noted that first publication rights for the data reside with the respective experimenters, and interim users should respect this right.

ACTIONS

The group agreed to entrust the development and implementation of the data dissemination procedures to R. Bauer (NASA LeRC) and W. Vogel (ACTS Data Center). Individual experimenters may deal with requests for specific data or analysis results, but in all cases R. Bauer and W. Vogel should be kept apprised of the situation. The group concluded that .PV1 files or software could be provided in response to outside requests if an individual experimenter thought it was really necessary, but such actions should be coordinated with R. Bauer and W. Vogel.

V. Equipment Issues

The group discussed the use of hydrophobic paint for the antenna, stimulated by a presentation of J. Goldhirsh on tests involving wetting the antenna dish and feed. Concerns were expressed regarding applying the paint midway through the experiment. It was agreed that the hydrophobic coating has beneficial effects, but that its use and maintenance is the responsibility of each site.

The need for periodic reapplication of the hydrophobic paint was acknowledged. However, the group decided that it be left to each experiment site to determine the appropriate time for reapplication, due to

the variability of local weather conditions from site to site (*i.e.*, from desert to subtropical).

R. Crane, who was unable to attend, forwarded a reminder that the iterative beacon/radiometer calibration technique may be compensating for unknown receiver characteristics, and a complete recalibration is recommended whenever any work is performed on the front end. X. Wang stated that the Oklahoma site uses radiosonde data (from the monthly summary log) to verify the system calibration, and modifies the noise diode factor to compensate for variations.

It was noted that the meteorological sensors are important to the ACTS experiments, and it is important to monitor their performance and address problems promptly. This activity is also the responsibility of each site.

VI. *Other Issues*

While not directly an ACTS issue, the NASA Handbooks were briefly discussed at the end of the meeting. The handbooks still appear to enjoy widespread appeal and use. However, it was noted with some regret that the 4-year revision cycle had slipped due to reduced funding for the Propagation Program. It is therefore inevitable that the value of the handbooks will deteriorate as the contents gradually become obsolete.